

**Amendments to and listing of the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-53. (Cancelled)

54. (Currently amended) ~~The~~ A single wall carbon nanotube of claim 52, having one or more substituents covalently bonded to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, wherein the substituent is the linear carbon or the cyclic carbon chain or both, and wherein the linear carbon chain or the cyclic carbon chain or both is substituted with at least one heteroatom, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

55. (Currently amended) ~~The~~ A single wall carbon nanotube of claim 52, having one or more substituents covalently bonded to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, wherein the substituent is the linear carbon or the cyclic carbon chain or both, and wherein the linear carbon chain or the cyclic carbon chain or both is substituted with one or more of the group consisting of =O, =S, hydroxy, an aminoalkyl, an amino acid, and a peptide of 2-8 amino acids, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

56. (Currently amended) ~~The~~ A single wall carbon nanotube of claim 52, having one or more substituents covalently bonded to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, wherein the substituents are alkyl or phenyl, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms.

57. (Currently amended) ~~The~~ A single wall carbon nanotube of claim 52, having one or more substituents covalently bonded to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms, and further comprising metal complexed to at least one of the substituents.

58. (Previously presented) The single wall carbon nanotube of claim 57, wherein the metal is selected from the group consisting of Group VI B metals and Group VIII B metals.

59-66. (Cancelled)

67. (Currently amended) The A product of claim 62, made by the process of covalently bonding substituents to carbon atoms on a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (a) one substituent to about 26 carbon atoms to (b) one substituent to about two carbon atoms, and further comprising the step of complexing a metal to at least one of the substituents such that the product comprises a complexed metal.

68. (Previously presented) The product of claim 67, wherein the metal is selected from the group consisting of Group V I B metals and Group VIII B metals.

69-75. (Cancelled)

76. (Currently amended) The A product of claim 72, made by the process comprising:

(a) fluorinating a single wall carbon nanotube;

(b) reacting the fluorinated single wall carbon nanotube with a compound containing a substituent to covalently bond the substituents to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, wherein the substituents are alkyl or phenyl, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ratio of from (i) one substituent to about 26 carbon atoms to (ii) one substituent to about two carbon atoms.

77. (Currently amended) The A product of claim 72, made by the process comprising:

(a) fluorinating a single wall carbon nanotube;  
(b) reacting the fluorinated single wall carbon nanotube with a compound containing a substituent to covalently bond the substituents to a sidewall of the single wall carbon nanotube, wherein the substituents are selected from the group consisting of alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, hydroxy, and OR', wherein R' is selected from the group consisting of hydrogen, alkyl, acyl, aryl, aralkyl, halogen, substituted thiol, unsubstituted thiol, substituted amino, unsubstituted amino, a linear carbon chain, and a cyclic carbon chain, and wherein the amount of substituent bonded to carbon atoms of the single wall carbon nanotube is at a substituent to carbon ration of from (i) one substituent to about 26 carbon atoms to (ii) one substituent to about two carbon atoms and further comprising the step of complexing a metal to at least one of the substituents such that the product comprises a complexed metal.

78. (Previously presented) The product of claim 77, wherein the metal is selected from the group consisting of Group VI B metals and Group VIII B metals.

79-96. (Cancelled)